Does Knowledge Entail Belief?

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

In contemporary epistemology, it is a widely shared assumption that knowledge entails belief: as a matter of conceptual necessity, if one knows that P, then one believes that P. This is known as *the epistemic entailment thesis*. In this thesis, I evaluate the epistemic entailment thesis by drawing on evidence from a variety of disciplines, including primatology, biology, psychology, and philosophy. I also report the results from a new behavioural experiment on Korean speakers. The results provide the first evidence that knowledge does not entail belief in Korean. In light of all the evidence reviewed here, I conclude that the epistemic entailment thesis is false.

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Table of Contents

AUTHOR'S DECLARATION ii
Abstract iii
Acknowledgements iv
Dedication v
Table of Contents vi
1 Introduction 1
1.1 Thesis and Structure of the Thesis 5
2 The Epistemic Entailment Thesis 6
2.1 (Assumed) Structure of Knowledge among Philosophers 6
2.2 A Brief Talk about Belief 10
2.3 Meaning of Knowledge Entailing Belief 13
3 Methodology 13
4 Evidence for the Epistemic Entailment Thesis 14
5 Evidence against the Epistemic Entailment Thesis 19
5.1 Evidence from the Evolutionarily Stable Strategy 20
5.2 Evidence from Primatology 25
5.3 Evidence from Developmental Psychology 30
5.4 But! 32
5.5 Early Thought Experiments 33
5.6 Evidence from Experimental Philosophy 36
5.7 Knowledge and Belief in Korean 41
6 Attempts to Salvage the Epistemic Entailment Thesis 45
7 Does Knowledge Exclude Belief? 51
8 Conclusion 51
References 54

1 Introduction

The study of knowledge is an essential philosophical area. It even has its own name, *epistemology*. From Plato and Aristotle to Descartes and the present day, epistemology is central to philosophy, interconnected with other areas such as Philosophy of Mind and aesthetics. For example, Plato's epistemology influenced his negative appraisal of art as a pale, thrice-removed imitation of reality. To take another example, Descartes' epistemological *method of doubt* affected the metaphysical conclusions he drew about the nature of mind and divinity.

In this thesis, I will address the question, "Does knowledge entail belief?" According to the Epistemic Entailment Thesis (EET), the answer is "yes." Before moving on to evaluate the central question, I will address why it deserves the reader's and my attention. Someone might argue that it is worth investigating for the sake of knowledge itself, with which I concur. It is always enjoyable (to say at least) to participate in the process of knowledge generation and knowing more about the world. However, I believe that there are more practical reasons to ask the question.

The first reason is that many philosophers have assumed that belief is an integral part of knowledge and, moreover, that the epistemic entailment thesis captures this relationship. Many standard analyses of knowledge will be examined closely later in the thesis. However, at this point, it will be advantageous to provide an overview of the literature to understand, at least briefly, how philosophers have thought of the relationship between knowledge and belief.

I start with the famous justified true belief account of knowledge (henceforth, *JTB* for short). One detail to keep in mind is that JTB was not, as is often claimed, a historically popular theory (Dutant 2015). Arguably, no philosophers explicitly defended the view before the twentieth century. However, it has become a "convenient fiction" to treat JTB "as a starting point" for organizing epistemological theories (Ichikawa and Steup 2018). For example, the *lightweight account of knowledge* deems knowledge to be true belief (Goldman and Olsson 2009; Sartwell 1991); some other philosophers argue that the concept of knowledge is JTB+X, where X are different conditions that, hopefully, help the concept to rule out objectionable forms of luck, such as *grounding* (Clark 1963, 47), *sensitivity* (Nozick 1981, 178), or *safety* (Sosa 1999, 142). Some other attempts consist of analyzing knowledge to be TB+Y, where Y are conditions other than justifications, such as *reliability* or *causation* (Armstrong 1973, 158–61; Goldman 1967; Ichikawa and Steup 2018). In light of all these competing theories, it is clear that many philosophers seem to consider belief to be a core concept associated with knowledge. Some even consider knowledge to be a species of belief (e.g. Schwitzgebel 2015).

Despite its popularity, the epistemic entailment thesis has rarely been explicitly defended by its proponents. Although there was much disagreement in the late 1960s and 70s, the debate faded without being resolved. In the aftermath, it appears that most epistemologists accepted the thesis (Buckwalter, Rose, and Turri 2015, 751; Mannison 1976, 139–40; Murray, Sytsma, and Livengood 2013; Myers-Schulz and Schwitzgebel 2013; Rose and Schaffer 2013, S20). Examining this common assumption can shift the paradigm in contemporary epistemology. In fact, proponents of a method called "knowledge first

approach," which argues that knowledge is unanalyzable to its smaller constituents (McGlynn 2014, 15), have more reasons to examine this assumption.

The second reason is that many contemporary debates in epistemology implicate the epistemic entailment thesis. On one hand, there is a debate between positions called "intellectualism" and "anti-intellectualism." Intellectualists states that knowledge-how (henceforth *procedural knowledge*, the ability to perform some action) and knowledge-that (henceforth *declarative knowledge*, the possession of a proposition that is true) are closely related, in the following sense: procedural knowledge is a special form of declarative knowledge. Anti-intellectualists deny this relationship (Brownstein and Michaelson 2016; Fantl 2017). Among intellectualists, one that stands out is Brogaard. She argues that procedural knowledge is reducible to declarative knowledge (Brogaard 2011) and states that cognitive abilities and practical abilities are the justificatory reasons for knowing (Brogaard 2011, 160). In my opinion, the suspicion that both procedural and declarative knowledge is reducible to one another seems to be intuitive because of our neural structure. Our brain does not have one area that controls declarative knowledge or procedural knowledge. Rather, neurons in different parts of the brain are combined to make a different outcome. Therefore, it seems unintuitive to divide the different knowledge, and, thus, Brogaard's suggestion has its merit. The only problem with her argument is, as she states, that there are cases where procedural knowledge does not entail belief. Since Broagaard seems to accept the epistemic entailment thesis, she introduces a concept called "primitive knowledge" to say that some knowledge does not entail belief. However, Brogaard does not need to face the problem if the epistemic entailment thesis is proven to be false.

On the other hand, the epistemic entailment thesis has implications for what has been called "the perceptual entailment thesis." The perceptual entailment thesis states that when a person sees, then the person knows (Ranalli 2014, 1223). As always, philosophers disagree with the thesis, and Ranalli categorizes the argument against it into three general categories, called "argument from luck," "from defeat," and "from belief" respectively (2014, 1226). Ranalli considers the second argument to be either unsound or relying on a crucial assumption which "forms the basis of [the] third argument"; he considers the third argument to be most powerful argument against the perceptual entailment thesis. The third argument is by Turri, and it appeals to the epistemic entailment thesis. How Turri's argument threatens to refute the perceptive entailment thesis is in the following way:

1. Knowledge entails belief. There are cases where perceiving that P does not entail believing that P.
2. If perceiving that P entails knowing that P, then perceiving that P entails believing that P.
3. However, since perceiving that P does not always entail believing that P, perceiving that P does not result in knowing that P. (Ranalli 2014, 1238; Turri 2010, 198)

To refute Turri's claim on the perceptual entailment thesis, Ranalli notes that the epistemic entailment thesis is an "un-argued assumption," and it may be the case that the perceptual entailment thesis can be "an intuition that [the proponents of the perceptual entailment thesis] are unwilling to concede" (Ranalli 2014, 1240). In such case, the perceptual entailment thesis may be used to argue against the epistemic entailment thesis in the following fashion:

1. Perception entails knowledge.

2. There are cases where perceiving that P does not entail believing that P.

3. If perceiving that P entails knowing that P, then perceiving that P entails believing that P.

4. However, since perceiving that P does not always entail believing that P, knowing that P does not always entail believing that P. (Ranalli 2014, 1240)

In other words, the perceptual entailment thesis may be the ground to argue against the epistemic entailment thesis. The dispute is, at this point, entrenched and in a stalemate (Ranalli 2014, 1241). Though Ranalli tries to dissipate the criticism by arguing that Turri ignored the difference between occurrent and dispositional belief, the attempt, I think, is not enough for the perceptual entailment thesis to be acquitted; only when the question of the epistemic entailment thesis is solved, will this other debate conclude.

To briefly recap, I believe that the epistemic entailment thesis is an important issue for epistemology. First, evaluating it is essential to a complete theory of knowledge. Second, many other epistemological debates turn on whether the epistemic entailment is true. Accordingly, the epistemic entailment thesis is a thesis worth examining.

There are many proposals for the relationship between knowledge and belief. Some think that knowledge entails belief. Some think that knowledge and belief are mutually exclusive. Some think that knowledge neither entails nor excludes belief. The last view, which I will argue, is a weaker version of the first and second view.

1.1 Thesis and Structure of the Thesis

My ultimate conclusion in this thesis is that the epistemic entailment thesis is probably false. There are many attempts to salvage it, but I will also argue that those attempts

fail in the end. After the introduction, I will discuss what it means for knowledge to entail belief. Then, in section 3, I will discuss the methodology that I will employ in the paper. I will consider the arguments of the proponents of the epistemic entailment thesis in section 4, and then point to some evidence that indicates that the thesis may be wrong in section 5. In section 6, I will examine attempts trying to salvage the epistemic entailment thesis and argue that they fail. Lastly, I end the paper with possible research projects in the future or research questions.

2 The Epistemic Entailment Thesis

Before moving on to discuss why the epistemic entailment thesis is not an accurate description of the relationship between knowledge and belief, I think it is best to state many views assuming the epistemic entailment thesis, clarify the meaning of "belief" used in the paper, and define the epistemic entailment thesis.

2.1 (Assumed) Structure of Knowledge among Philosophers

How does knowledge entail belief? What is the mechanism behind it? The analyses of knowledge indicate how knowledge entails belief; philosophers claim that belief is a constituent of knowledge. Ever since Gettier proposed that philosophers have accepted knowledge to be justified true belief in the past,[1] the analyses of knowledge almost always considered belief to be an integral part of knowledge. Let us examine the proposed analyses of knowledge.

[1] However, it is a myth. Read Dutant 2015 for more information.

The first analysis of knowledge I will go over is perhaps the most famous of all; it is called "justified true belief account of knowledge." It states the following:

> S knows that P IFF
>
> 1. P is true,
> 2. S believes that P, and
> 3. S is justified in believing that P. (Gettier 1963, 121)

Conditions 1-3 are all conditions for knowing X, according to JTB. However, there are cases where each condition is met though knowledge is not attributed. For example, let's say I put my blue pen on a desk and went to take a shower. Let's also say that my brother came into my room, replaced my blue pen with his same looking blue pen and left quietly. I am justified in believing that a blue pen is on my desk, for I put my blue pen on the desk (Starmans and Friedman 2012). Also, it is a true belief, for my brother left a similar looking blue pen on the desk. I satisfied all the conditions for "knowing" that **a** blue pen is on my desk. However, since my brother took my pen and replaced with his, the proposition "I know that **my** blue pen is on my desk" is false. Consequently, "I know that **a** blue pen is on my desk" is false, because it has been logically driven from a false premise that **my** blue pen is on the desk. Thus, I **now** fail the justification condition, resulting in supposedly my lack of knowledge. To escape this "Gettierization" many philosophers put forward different ideas of knowledge-concept.

One of such attempts is "lightweight knowledge" (Ichikawa and Steup 2018), where some people analyze knowledge as the following:

> S knows that P IFF

1. S believes that P, and
2. P is true. (Goldman and Olsson 2009, 21; Sartwell 1991)

Hawthorne describes this account of knowledge as what is called "information possession" (Hawthorne 2002, 254). Indeed, when we ask people whether they know a proposition, P, we rarely ask them for the justification of P unless the situation requires special attention. For example, if I ask people in a room whether they know that Vienna is the capital city of Austria and tally those who know and those who do not know, I do not ask for justification. "Even if someone got the information from a book that was full of mistakes—this bit of information being a rare exception—[I] will in this context count them in" (Hawthorne 2002, 254).

Someone may argue that since people demand proof of knowledge when people challenge assertion (Turri 2016, 8), of which knowledge is the norm (Turri 2016), justification is an integral part of the knowledge-concept.[2] The argument will bring this attempt back to JTB account of knowledge; thus, many philosophers have put forward other accounts of knowledge, where X is added to avoid the "Gettierization." According to them, knowledge is the following:

S knows that P IFF

1. P is true.
2. S believes that P,
3. S is justified in believing that P, and
4. The condition, X, has been met

[2] Although the thesis will assume that knowledge is a norm of assertion, there are critics who think otherwise. See Pagin (2016) for more details.

There are many proposals for the condition X. One such example is Clark's "grounding condition: "S's belief that [P] is fully grounded" (1963, 47). Also, Nozick added what is called "sensitivity condition" (Nozick 1981, 178) while Sosa argued for what is called "safety condition" (Sosa 1999, 142), which expanded later to AAA structure, which included accuracy, adroitness, and aptness to the analysis (Sosa 2007, 23). Also, since "Gettier problem shows that including justification condition does not rule out all epistemically problematic instances of luck," many philosophers move away from justification condition; epistemic reliabilism and causal theories of knowledge are such attempts (Armstrong 1973, 158–61; Goldman 1967; Ichikawa and Steup 2018). Analyses employing these in a simple way take the form of the following:

> S knows that P IFF
>
> 1. S believes that P, and either
> 2. S's belief that P was produced by a reliable cognitive process (Simple K-Reliabilism), or S's belief that P is caused by the fact that P (Simple Causal Theory of Knowledge). (Ichikawa and Steup 2018).

However, it may be the case that it is impossible to escape from "Gettierization." Any theory may be "Gettierized" by starting with a "case of justified (or warranted) false belief" followed by making the "element of justification (warrant) strong enough for knowledge" and modifying the case so that the belief is merely by luck (Ichikawa and Steup 2018; Zagzebski 1994, 69). So, Zagzebski added *no epistemic luck condition* (Zagzebski 1994, 72) and explicitly rejected Gettierization.

It should now be clear that it is widely assumed that knowledge entails belief. Starting with the lightweight knowledge (true belief (TB)) account, JTB, XTB (where X is a

replacement of justification condition), and to JTB+Y (where Y is a condition that prevents an analysis of knowledge from "Gettierized"), many of the analyses of knowledge suspect belief to be fundamental to mental representation than knowledge. Schwitzgebel notes this point in the following:

> The traditional analysis of knowledge… takes knowledge to be a species of belief…. Most contemporary treatments of knowledge are modifications or qualifications of the traditional analysis and consequently also treat knowledge as a species of belief (Schwitzgebel 2015).

2.2 A Brief Talk about Belief

What does "belief" mean in the context of the epistemic entailment thesis? I believe that there are two roles linked to belief: *mental representation* **and** *conviction/certainty*.

First, belief is our mental state whether it be attitude, stance, take, or opinion (Schwitzgebel 2015); it is how we represent the world. According to some, knowledge is valuable because it seems that it includes true belief, which is a type of representation of the world (Fantl and McGrath 2009, 165). Having a correct representation is important because it justifies our interaction with the environment (Fantl and McGrath 2009, 66). Craig also makes a similar point in which he states that human "beings need true beliefs about their environment, beliefs that can serve to guide their actions to a successful outcome" (Craig 1990, 11). In the end, since knowledge is a mental representation of the world, it is intuitive to say that knowledge is to be grounded in belief, which is also a mental representation of the world.

The second usage of "belief" is to indicate conviction/certainty. Someone may argue that belief has nothing to do with conviction/certainty, for people use "believe" to indicate an uncertain state. Let us consider the following dialogue.

> Jean: Hey Kate. Are you sure you are gonna be at the airport when I come back?
>
> Kate: I believe so? There shouldn't be any traffic jam at the time.
>
> Jean: Umm … that is not very reassuring.

In the dialogue, Kate displays uncertainty arriving at the airport on time because of a traffic jam. Though she thinks that she will make it, it is clear that she is worried about the traffic jam.

However, it is just half of the picture. Based on introspection and social observation, I believe that there are other usages of the word. The other usage of "belief" is to indicate a conviction as opposed to uncertainty. One of the examples is theism. Theists believe in God, yet they usually have a conviction that God exists. They emotionally endorse the fact that God exists and act accordingly. If belief is solely used to indicate uncertainty, are they doubting that God exists? If so, why do they show such conviction? Rather, it is more natural to see them convinced that God exists (Connors and Halligan 2015, 2).

What is more is that belief is one of the factors that motivates humans to act. Belief is conviction about the world, an endorsement. Endorsement of some goal motivates people to act. For example, martyrdom happens when people endorse the goal publicly and do not denounce it upon arrest even to the point of death. In service of the goal, they talk to people, go on a public forum, and argue against what they believe is not the case; they are convinced that the goal is very important. In this way and others, belief motivates humans to act.

Then which sense is "belief" in the epistemic entailment thesis? I believe that the most natural reading of the epistemic entailment thesis involves belief as conviction. First, though the verb usage of "belief" diverges, the noun usage is the latter case. When "belief" is used as a verb ("to believe"), someone may make it into a question. However, no other alternative usage is possible when it comes to the noun form, "belief." If someone has a belief that *P* (such as having a belief in someone), people are not indicating uncertainty. Second, the formal usage is not universal. In Korean, the word, "belief" is translated as 믿음, and "to believe" is translated as 믿다. When a Korean speaker asks the others whether they are certain or not, few of the possible responses are "Maybe" or "I do not know." However, if they answer with "난 그렇게 믿어" (translated as "I believe that it is the case"), then they are showing their conviction that P. The usage of "belief" in an uncertain case is not universal across languages or, at least, is not shared with Korean. Considering that Korean is a non-Indo-European language (Mallory and Adams 2006, 84) and a language isolate (Song 2005), I believe that it is safe to assume that the latter usage is more accepted across cultures than the former one.

In the end, philosophers claim that usage of "belief" in the literature is *outright belief* though there are many usages of the word (Ichikawa 2017, 222). Philosophical usage of the word indicates no uncertainty, thus requiring full commitment (Ichikawa 2017, 222). To believe outright that P is to be certain of the proposition P and to conduct upon P (Fantl and McGrath 2009, 128).

To summarize, there are two roles the word, "belief," fills in the context of the epistemic entailment thesis: mental representation and certainty/conviction.

2.3 Meaning of Knowledge Entailing Belief

What does it mean when philosophers claim that knowledge entails belief? It means that if someone knows that P, then the person not only has a mental representation that P, but also is confident that P, endorses that P, and is willing to act upon that P, such as talking about P. In fact, people talk about their, for example, political and religious beliefs and act upon them to the point of death, as history shows. For another mundane example, if I believe that there is food in the fridge, I open it up when I am hungry. As such, people who know that P base their actions and words upon it; they are confident that P, are certain that P, endorse P, and act upon P. Judging by the fact that knowledge is the norm of assertion (Turri 2016), it *prima facie* seems to be true that knowledge entails belief.

3 Methodology

The thesis will draw implications and conclusions from various academic disciplines. First, I will look at what philosophers said on the matter, focusing on discussions from the 1960s, 1970s, and more recently from the 2010s. Second, I will draw on results from experimental psychology and philosophy, which are relevant to evaluating hypotheses about linguistic meaning and conceptual content. Third, I will rely on evidence from primatology, especially research on primate theory of mind. Fourth, I will draw on theoretical biology, the notion of an evolutionarily stable strategy in particular. Lastly, reaction time studies will be valuable resources. If, for example, knowledge attribution happens before belief attribution,

then it indicates that belief-concept, which is assumed to be simpler, may be more complex than knowledge-concept.

4 Evidence for the Epistemic Entailment Thesis

Although the epistemic entailment thesis is widely accepted, it should be noted that it has rarely been defended, at least not directly. I hypothesize that the root of the lack of the defence stems from the intuitiveness of the theory.

First, I find that the epistemic entailment thesis is intuitive. Ever since I was young, I was always confused when people said, “I know it to be true, but I cannot believe it,” whether the topic of the conversation was on things such as religion, politics. I was always left wondering, “How can it be?” If one knows that P, shall not the person embrace it to be true, commit it to be true, and act on it to be true? For example, if I knew that a tiger is hiding in a bush, I would be scared to enter into the bush.

Second, knowledge is factive; people base their knowledge attributions of the others on truth rather than certainty or belief (Turri 2016, 12; Turri and Park forthcoming). If someone claims to know something, then they have a mental representation that ought to match with the world. For example, if I claim to know that I have an arm yet do not have an arm, then I do not know that I have an arm. Now, the role of belief is to help people to act and navigate the world, for it compels people to act. Therefore, if people know that P, then they have a correct mental representation of the world. If such is the case, then the person shall believe that P, for it is beneficial to act upon truth (most of the time, at least). Thus,

some philosophers claim, "[knowledge] is valuable… because knowledge includes true belief, which is valuable" (Fantl and McGrath 2009, 165).

In the end, the epistemic entailment thesis seems to be intuitive. People can find cases where belief exists without knowledge, but they have trouble finding the opposite cases. However, it is not to say that there exists no defence for it. There are two main strategies philosophers employ to argue for the stance.

First, I will look at the "old strategy." This position assumes that if people know, then they are certain of the content of knowledge. For example, if I know that water is H2O, I am certain that water is H2O. Now, let's take a look at Lehrer's argument for the epistemic entailment thesis. Lehrer's attempts start where Radford left off. Radford, in his famous 1966 paper, argued that there is a case where an agent knows that P, but does not believe that P. To summarize, Radford talks about a man named Jean, who does not know anything about English history. Jean then was asked the date of the death of Queen Elizabeth in a bet. When Jean was about to answer the question, the opponent pressed hard on him. In the end, Jean chose 1603 to be the answer, and he was correct. In fact, he was correct in other questions, such as the year when William the Conqueror landed and the year James the First died. Since he knew other answers, it is plausible to say that Jean knew some English history including the year Queen Elizabeth died (Radford 1966, 4). Lehrer responds to such counterexample to the epistemic entailment thesis by arguing that it is not a genuine case of knowledge in the following way:

1. Jean does not know that his answer is correct.
2. Jean's answer is that Queen Elizabeth died in 1603.

3. If Jean does not know that his answer is correct, and Jean's answer is that Queen Elizabeth died in 1603, then Jean does not know.

4. Therefore, Jean does not know that Queen Elizabeth died in 1603. (Lehrer 1968, 495)

This type of reasoning appeals to the intuition that if people know that P, they must be able to cite it whether they are correct or not (Armstrong 1969, 27). Since Jean was not able to cite whether he was correct or not, many argued that Radford's case was not a genuine case of knowledge. This point is further developed as the following:

1. If a man does not believe that P, then he does not believe that he knows that P.

2. If a man does not believe that he knows that P, then he does not know that he correctly says that P.

3. If he does not know that he correctly says that P, then he does not know that P.

4. Therefore, if a man does not believe that P, then he does not know that P, which is contrapositive of the epistemic entailment thesis. (Lehrer 1968, 498)

This approach is similar to the one used to argue against Mannison, who argues that inexplicable knowledge does not require belief (Mannison 1976). Mannison's thought experiment is the following. Suppose that a man, called Jones, always had an ability to pick a winning horse in a race though it was not known to him. Therefore, when he first went to a game of horse racing in 1950, he did not know that he had the ability to know the winning horse of the race. However, he was correct every time when someone asked him to choose the winning horse for 25 years, every day. After 25 years, he believed he had the ability and knew which horse would win. However, when he first chose the winning horse, he did not

believe in his choice although he knew that the horse would win. Therefore, inexplicable knowledge does not entail belief (Mannison 1976, 141–42).

Some philosophers disagreed with Mannison. Though they agreed that Jones knew that the horse he picked in 1975, they did not agree that Jones knew the winning horse in 1950s. To understand their position, we have to consider why they thought that Jones knew the winning horse in 1950s. Their reasoning is the following.

1. Jones knows that he has the ability to pick the winning horse.
2. Jones knows that he has picked Whirlwind.
3. Therefore, Jones knows that Whirlwind will win. (Almeder and Arrington 1977, 89)

Jones' awareness came from the fact that Jones was never wrong when he chose the winning horse, they argue. If such were not the case, people would not have granted that he knows that the winning horse picked in 1974 will win. In other words, it "is because Jones demonstrates his awareness of his ability that we are willing to grant his knowledge of the fact that [the horse Jones picked] will be the winner" (Almeder and Arrington 1977, 89). The "old strategy," which assumes that people who know that P must know that they are saying P correctly, echoes in their statement; since Jones was certain of his ability (and, thus, was aware that he was correct), people attributed knowledge. If the assumption holds, then it seems that the epistemic entailment holds.

The second strategy is a shift from the first one. While the first strategy assumed that knowledge required a sense of certainty, the new strategy does not make this assumption. The old strategy focused on an occurrent belief, whereas the new strategy allows for

dispositional belief. Rose and Schaffer argue that knowledge entails dispositional belief and that the type of belief necessary for knowledge is dispositional—i.e., inactive. They feature a case of an unconfident examinee, which is a modification from the thought experiment by Radford. The unconfident examinee features Jean, who had to answer the date of the death of Queen Elizabeth in an exam for an English history class. When Jean was about to write the answer, a bell, which indicates there are only five minutes left for the test, rings, and he panics. In the end, Jean chose to write 1603 for the answer, which was correct. The authors state that panic masks the belief, making it dispositional instead of occurrent (Rose and Schaffer 2013). In other words, knowledge entails implicit belief in the mind.

How they advance to make their hypothesis is intriguing. Rose and Schaffer wrote their paper in response to Myers-Schulz and Schwitzgebel, who argue that knowledge does not entail belief by using experimental philosophical methodology (Myers-Schulz and Schwitzgebel 2013). Myers-Schulz and Schwitzgebel tested folk-epistemology with the case of an unconfident examinee, which is similar to the thought experiment of Radford. The experiment confirmed that the intuition of Radford is more pervasive in the general public (Myers-Schulz and Schwitzgebel 2013). However, by eliciting the dispositional belief, Rose and Schaffer were able to flip the result (Rose and Schaffer 2013). The flip happened by adding a phrase next to the word, “believe.” The original text used by Myers-Schulz and Schwitzgebel is the following:

> Did Kate know that Queen Elizabeth died in 1603? (2013, 374)

The text change to the following by Rose and Schaffer:

> Did Kate still believe (in the sense that she still held the information in her mind even if she could not access it) that Queen Elizabeth died in 1603? (2013, S34)

The phrase invoked dispositional belief, and the result was flipped. It supports the hypothesis that when Myers-Schulz asked participants in their study, they invoked occurrent belief, and people would deny occurrent belief when the agent in the story knows the answer. However, when the sense of belief changed to dispositional, people started to attribute it to Jean! The most plausible hypothesis, in this case, is that knowledge entails dispositional belief. I will call this removal of occurrent-ness in belief the "new strategy."

5 Evidence against the Epistemic Entailment Thesis

In this section, I will examine pieces of evidence against the epistemic entailment thesis. There are seven subsections in section 6. First, I will examine the epistemic entailment thesis from the perspective of the evolutionarily stable strategy. Second, I will draw on findings from primatology to argue against the validity of epistemic entailment thesis. Third, I will turn my focus on developmental psychology to further the cause. In the fourth section, I will answer some of objections readers may raise regarding my approaches so far. Many are hesitant to utilize scientific evidence in a philosophical discourse and may object to the approach the thesis takes, and my hope is to ease those worries. After that, I will turn to philosophical literature starting in the fifth section. As I turn to the philosophical literature, I will review some of the thought experiments that deny the epistemic entailment thesis. Fifth, I will review evidence from studies in experimental philosophy. Seventh, I will take a look at a cross-cultural study between anglophones and Korean speakers. In the end, section five tries to argue against the epistemic entailment thesis.

5.1 Evidence from the Evolutionarily Stable Strategy

Evolutionarily game theory "is a way of thinking about evolution at the phenotypic level when the fitnesses of particular phenotypes depend on their frequencies in the population" (Smith 1982, 1). Given various situations and behaviours of other agents either within or outside of the species, it asks the question, "What will maximize animals' survival and successful reproduction?" For example, there are two different strategies in a fight between the animals: "total war" and "limited war." In nature, it is often observed that the "total war" strategy has rarely been used in an intraspecies conflict. One example of animals utilizing limited war strategy are snakes; male snakes will fight with one another without using their fangs (Smith and Price 1973, 15). Though neither snake may be a clear winner, both will avoid being poisoned and death or severe injury as of consequence. The animals in conflict thus achieve the Nash equilibrium, where the players achieve the best possible results collectively. However, this "limited war" approach to conflicts is beneficial only when most conspecifics adopt the behaviour. Going back to the example of the snakes, snakes who do not use fangs are not likely to survive a conflict when other snakes poison them. Thus, the fitness of phenotype ("limited war" in this case) depends on phenotypic frequencies in the population.

Darwin's natural selection is a process where the fittest tend to survive. Thus, a good strategy in evolution leaves an individual with many offspring. In the case of the snake, both snakes will be able to leave more children since they will not be dead after the fight. By employing "limited war," they tend to increase their "fitness." A strategy is evolutionarily stable if no other strategy could "invade the population" and, through a process of natural

selection, increase the population's reproductive fitness (Smith and Price 1973, 15; Smith 1982, 10).

With this in mind, let us turn to knowledge and belief. First, knowledge is a norm of assertion (Turri 2016). The question is the following: Under "what conditions should an assertion… be made" (Turri 2016, 2)? I think my anecdote can illustrate the point. Sometime in June 2018, in the department lunchroom, I saw someone who had been recently interviewed for a job at the university. The decision about whom the department hired had not yet been announced, and I did not have the information. Nevertheless, I believed that he was hired. Indeed, I was certain that he was hired, based on the evidence I had. However, I could not bring myself to say, "Congratulations," because I did not know that he was hired. My knowledge status dictated my (non-)assertion in the case. Though it is a personal anecdote, people follow the similar convention across the culture (Turri 2016; Turri and Park forthcoming); knowledge is the norm of assertion.

Since knowledge is the norm of assertion, we usually attribute knowledge to assertors as long as there is no reason to reject it. For example, if someone told me that the capital city of Honduras is Tegucigalpa, I would accept the fact that the capital city of Honduras is Tegucigalpa unless the person had disqualifying characteristics, such being a pathological liar. At this point, someone may argue that we attribute belief when people assert that P. Indeed, people attribute belief to patients with delusions, such as Capgras syndrome (Rose, Buckwalter, and Turri 2014). However, the same study states that it happens only when the assertion is frequently made (Rose, Buckwalter, and Turri 2014, 491). It is in stark contrast with knowledge attribution, for it does not require frequent assertion. In the end, people

usually attribute knowledge to assertors as long as there is no reason to reject the claim; i.e., we assert to communicate knowledge. Indeed, psychologists state that humans have "strong bias toward trusting new information" (Mills 2013, 408).

However, though the default position is to accept the claim, it is not always the case. People doubt. What is interesting is that children doubt contrary to the typical assumption, which states that they are gullible, though they develop critical thinking skills further as they age. They gradually "develop the ability to distinguish trustworthy sources from untrustworthy ones, becoming more and more capable of taking a critical stance toward new information" (Mills 2013, 413–14). This development seems to reach its peak in adolescence years. Why is it the case?

After all, if knowledge is a norm of assertion, and the truth is essential to knowledge, then the norm of assertion is "factive." This is revealed in the behaviour of both Anglophones and Korean speakers (Turri 2016, 12; Turri and Park forthcoming). If such is the case, then shouldn't children believe in authorities? After all, school teaches children various facts about the world through assertion, something that helps and prepares them to navigate the world. It seems that it is beneficial to listen to parents and teachers and endorse their teachings. However, the fact that children do not always believe the adults suggests that it is not evolutionarily stable to do so.

Here is my reasoning. It is beneficial for individuals to listen to what others say and know what others know; however, it is beneficial for them to believe it. Belief, as I have argued at the beginning of the paper, is one of the motivations that encourage people to act. If people are to believe everything that has been asserted, the survival rate of the individuals

may not be high. Indeed, researchers found that children, and as well as adults, who are gullible and easily trust others are at "at risk for maladjustment, social exclusion, and other issues" (Mills 2013, 414–15). So, believing and trusting everything one hears is not an effective strategy for survival.

For example, let us say that a wise man in a tribe asserted that a tiger had been living in the forest not far from the village and that he saw orange and black stripes moving in the trees. Having listened to the wise man, a person, S, told the others that a tiger had been living in the forest just to warn the others, though S did not believe the word of the wise man. Winter came, and food became scarce. S went into the forest to search for food and survived the winter. What is the lesson here?

In the thought experiment, S knew what the wise man said about the tiger. If knowledge entailed belief, then S should have believed what the wise man said about the tiger in the forest. However, since S did not believe it, S was able to explore the world, and landed himself a jackpot. If S were to believe what the wise man said, S would not have been able to survive the winter. It seems that it is not evolutionarily stable to believe everything we hear.

One may argue that the thought experiment does not follow. When we utter that the wise man said that a tiger is living in the forest, the key information is that a person said that P. If such is the case, then it is perfectly reasonable to say that the man believes that the wise man said that P. However, it is not that simple. When one knows that a person said that P, then the person knows what has been uttered. In our case, S knows that the wise man said that P. So, S knows who said that P, and what the wise man uttered. Philosophers readily

agree that S knows that the wise man said that P (who) and that the man believes that the wise man said that P. However, the "unspoken" knowledge here is what has been said. The man clearly knows what has been said. However, philosophers find it dubious to say that the man believes what has been said. Why do we follow EET in one case while we do not follow it in another case?

Some may argue that I am misapplying the epistemic entailment thesis. However, I find this objection dubious. If I am not to substitute knowledge with belief in a straightforward way, how am I to do it? It seems that substitution between knowledge and belief should be quite straightforward. If S knows what the wise man said, S believes what the wise man said. The belief implies that S believes that what the wise man said is true.

In the end, there is a difference between knowing the content (P in this case) and knowing the evaluation of the content (in this case, it is "P is true" or "P is false"), but not between believing the content and believing the evaluation of the content to be true. It implies that there exists at least two to one relationship between belief and knowledge. Why is it the case?

I think that it is because belief acts as one of the evaluators of the content. After all, if one believes that P, then one is convinced that P, endorses that P, and acts upon that P. Belief is a positive attitude towards P. Thus, belief implies acceptance, and here is where the evaluation and content converge. When I know the content, I automatically believe the content (if the epistemic entailment thesis is correct). If I believe the content, then I accept the content to be true. Such is the implication of the epistemic entailment thesis, and the belief shows why the epistemic entailment thesis is not evolutionarily stable.

5.2 Evidence from Primatology

It is common knowledge that chimpanzees and humans share the same common ancestor. Though there are many dissimilarities such as the size of brains and number of hairs on the body, there are many similarities too, such as living in large social groups; after all, 98.8% of the genes of both species are identical to each other. Among the similarities, however, are the abilities of both species to attribute knowledge to one another. Knowledge attributions in humans are quite obvious; humans often say that a person A knows that P. However, knowledge attributions in chimpanzees are not quite so obvious.

To test chimpanzees' knowledge attribution, one team of researchers brought in three chimpanzees (two of them are dominant whereas the other one is subordinate) in separate rooms that are both connected to a common area. In the common area, one of the researchers placed food in one of two occluders. The subordinate chimpanzee now knows two facts: the location of the food and the fact that the dominant chimpanzee knows the location of the food. Researchers then switched the dominant chimpanzee with the other one, who has not witnessed the hiding of the food, half of the time. The result was astonishing. The subordinate chimpanzees retrieved the food significantly more when researchers swapped the dominant chimpanzees than when the dominant chimpanzees were not changed (Hare, Call, and Tomasello 2001, 146). How can we explain the results?

I think that the best explanation here is to accept the fact that chimpanzees are capable of attributing knowledge to the others. When we perceive something, it usually leads to knowledge. For example, if I see a book on top of a bookshelf, I know that the book is on top of the bookshelf. Accordingly, when the subordinate chimpanzees saw that a dominant

chimpanzee saw the location of the food, they knew that it knew the location of the food. Thus, the subordinate chimpanzees were hesitant to grab the food for themselves for fear of retaliation when the researchers did not swap the dominant chimpanzee. However, if the dominant chimpanzee was switched, she grabbed the food. The most straightforward explanation is that she knew that the switched dominant chimpanzee did not know that the food was there.

Someone may claim that the results were idiosyncratic. However, this test has been replicated using different methods. "We have many different methodologies involving several different experimental paradigms and response measures all leading to the same conclusion" (Call and Tomasello 2008). One may still object by arguing that the behaviours are results from surface level behavioural rules, that apes do not have a theory of mind; that they do not have the ability to attribute mental states to others; and that they act in such ways to make others behave in a certain way (Povinelli and Vonk 2003, 2006). However, if such is the case, then they will have to answer the fact that infants and young children do not have a theory of mind, for "many of the studies correspond rather closely to studies conducted with infants" (Call and Tomasello 2008, 190).

Then how about belief? If knowledge entails belief, chimpanzees must be able to attribute beliefs to the others, for they do attribute knowledge to the other agents. However, although there is a study which shows empirical evidence that they can limitedly attribute belief to the others, the evidence suggests that they are not able to do so in all relevant cases. For now, let's take a look at the evidence. I will go over the objection later in the section.

False belief task tests whether the subjects in the test can know what the others believe. “Mental-state understanding requires realizing that such states may reflect reality and may be manifest in overt behaviour, but are nonetheless internal and mental, and thus distinct from real-world events, situations, or behaviours” (Wellman, Cross, and Watson 2001, 655). That is, belief recognizes that there exists a chance where it may not be true whereas knowledge must be a true reflection of the world. It means that if an agent can behave in accordance with the other’s belief that is contradictory to the world, then it is a compelling evidence for “appreciating this distinction between mind and world” (Wellman, Cross, and Watson 2001, 655); i.e., an agent can represent what is in other’s minds. In such cases, false belief tasks provide a basis for an agent’s ability to represent other’s minds in the mind of the agent, which seems to indicate possession of a similar concept.

The procedure of false belief tasks is similar to the one described above for knowledge-ignorance test. The only difference is that instead of switching a dominant chimpanzee with the other dominant one, researchers switch the location of the food. The move will create a false belief in the dominant chimpanzee. If the subordinate chimpanzee can attribute belief to the others, she will predict the destination of the dominant chimpanzee and grab the food for herself (Call and Tomasello 2008).

Surprisingly, the subordinate chimpanzees did not perform so well in the experiments. However, how could it be? If knowledge entails belief, and chimpanzees can attribute knowledge to others (thus knows what others know), then they must be able to attribute belief to the others. However, there is no strong empirical evidence that

chimpanzees possess belief-attribution ability although many empirical experiments support chimpanzees' knowledge-attribution ability.

It is confusing because philosophers thought that knowledge necessitates belief, for they considered belief to be a constituent of knowledge. If such is the case, belief attribution must follow knowledge attribution, for how would one attribute knowledge to the other if they do not attribute belief to the other? Since chimpanzees and humans share the same common ancestor, and knowledge attribution is common in both species, it is reasonable to assume that our common ancestor could attribute knowledge to the others. If humans can attribute knowledge and belief to the others, chimpanzees must behave similarly. After all, knowledge entails belief. However, the evidence from chimpanzee theory of mind suggests otherwise.

There are two possible objections that one may argue. First, one may argue that the theory of mind of primates may be different from that of humans. Indeed, some even claim that it is anthropocentric to attribute a theory of mind to chimpanzees (Povinelli and Vonk 2006, 570). The epistemic entailment thesis may apply only to humans, and there is no reason to suspect that it applies to primates, which is a way to make sense of the result. However, this seems that is an *ad hoc* explanation; if mental states determine the behaviour, then similar behaviours should be caused by similar mental states. As mentioned above, they will have to explain similar results from human infants, and, consequently, argue that human infants do not have a theory of mind. If they accuse that the theory of mind on primates are anthropocentric, then why would human babies not have minds? Denying such correlation without empirical data seems very arbitrary.

Second, one may reject the claim based on one recent study that shows that apes "accurately anticipated the goal-directed behaviour of an agent" with false belief (Krupenye et al. 2016, 113). However, I believe there are three important factors to remind ourselves. First, though it is true that they may have some elementary concept of belief, we still do not have any evidence that they attribute belief when attributing knowledge. The next step for the proponents of the epistemic entailment thesis is now to prove that belief and knowledge attribution go hand in hand. Unless the step is taken, I do not think it is strong enough to refute the fact their usage of belief is limited, which leads to the second factor: the false belief tests they passed are still more limited than the knowledge attribution tests. It is still true that the primates fail most of the other forms of false belief test. I would be cautious to generalize and claim that they attribute beliefs to the others. Lastly, though it seems that apes may have "implicit understanding of belief", one has to remember that they often fail to understand false-belief based on explicit behavioural choices (Krupenye et al. 2016, 113). It is in contrast to knowledge attribution of apes; their knowledge attribution skills are much stronger and are much more generalized.

In the end, I believe that there are strong reasons to believe that the epistemic entailment does not describe the theory of mind of primates. However, going back to the first point, it may be the case that the epistemic entailment thesis is species-specific; it may be specific to humans. Therefore, I will now turn to developmental psychology to further state my case.

5.3 Evidence from Developmental Psychology

Psychologists are as curious as primatologists when it comes to the question of children's theory of mind. False belief tasks, again, have been used multiple times to test whether children can ascribe belief status to the others. The setup is similar to that of chimpanzees. The only difference is that the classical false belief tasks children perform ask children about a protagonist's belief instead of making them compete for the food (Wellman, Cross, and Watson 2001, 655; Wimmer and Perner 1983, 106).

In the literature, researchers generally agree that children above the age of 4 can attribute false beliefs to others (Call and Tomasello 2008, 191; Mahy et al. 2017; Wellman, Cross, and Watson 2001; Wimmer and Perner 1983).

However, this is not what I am interested in. I am interested in the cases where agents are either not able to attribute beliefs to the others, or, at least, reluctant to do so. Thus, my question is this: can infants and young children attribute beliefs to the other agents? I have already mentioned that older children pass the false belief tasks. However, younger children at the age of 3 do not pass the test (Wimmer and Perner 1983, 114).

The result is in stark contrast to their ability to attribute knowledge to the other agents. In a study, a team of researchers visited homes of 2.5-year-old children. After some warm-up sessions, they tested whether children indicated where the hidden objects (such as toys) locate under various conditions. First, both locations of a stick (that are necessary to retrieve the toy) and the toy were known to "helpers" (usually the children's mothers). Second, only the location of the stick was known to the "helpers." Third, only the location of the toy was known to the "helpers." Lastly, both the location of the stick and the toy were not

known to the "helpers." In the study, children were sensitive to the knowledge-conditions of the helpers; they indicated the location of the stick (which is essential when retrieving the toy) and the toy when the helper did not know where both of them were (Virányi et al. 2006). Someone may claim that this research is idiosyncratic. However, different studies already established similar results.

These studies raise an obvious question for proponents of the entailment thesis. If knowledge entails belief (that belief is a constituent of knowledge), then why do children attribute knowledge before they attribute belief? Philosophers long suspected that belief was more fundamental than knowledge. However, while they are not capable of attributing belief, children can adjust their behaviour according to the knowledge of other agents.

Now, it does not mean that they do not have the belief-concept. Young infants can pass a false belief test when the procedures are simplified (Call and Tomasello 2008, 191; Krupenye et al. 2016, 110). Infants understand belief at least in an implicit level. However, when we consider the mastery level of knowledge-ignorance test versus false belief test, it does not make sense to master a more complex concept before (supposedly) simpler concept.

Speaking of complexity and simplicity of mental representation, it is desirable to note that psychologists consider belief to be more complex than knowledge. The reason is that knowledge is directly linked to the real world, whereas a belief can be false. Indeed, children' ability to be critical of information is connected directly to social cognition, where they realize that a person may hold a belief that is false (Mills 2013, 412). So, three-year-olds respond to false claims strongly whereas four-year-olds are more sophisticated and are

evaluating the accuracy of the claim compared to the real worlds. Again, it suggests that the suspected relationship between belief and knowledge can be wrong.

5.4 But!

Someone may object to the studies because of one implicit assumption. The assumption is that if an agent cannot attribute beliefs to the others, they do not act in a certain way that would reflect the ability. However, why would it be the case? It may be that they do not act upon the mental representation though they may have the concept. The assumption in the experiments is that false belief attribution is a piece of evidence that a subject in the test has a belief concept. However, it may be the case that false belief attribution requires mastery over the concept in the species, and some may object that this assumption is too hasty. Indeed, though children under 3 fail false belief tasks most of the times, there are signs that they do understand "something in the direction of false beliefs" (Call and Tomasello 2008, 191). The same criticism applies to apes, and I have tried to address the concern.

To address the concern, I want to question why the mastery of (supposedly) simpler concept happens before complex one. Also, if knowledge entails belief, then should not belief attribution occur at least as frequently as knowledge attribution? The burden of proof here lies with the proponents of the epistemic entailment thesis.

With that being said, I believe that shifting the burden of proof is not always a satisfactory answer. Therefore, now I want to turn my attention to the philosophical literature on the matter. First, I will review some of the papers from the old philosophical literature. Then, I will fast-forward to the recent literature by experimental philosophers.

5.5 Early Thought Experiments

Philosophers performed multiple thought experiments to capture instances in which a protagonist in a thought experiment knows that P but do not believe that P. One of such thought experiment is a case of Jean, which we have looked at earlier. I will describe the case further here.

Jean, a French Canadian, did not know much about English history. In the thought experiment, Jean was being quizzed by Tom on the subject. From the conversation, Jean and Tom were betting against each other. Tom asked him, "What about Elizabeth?", referring to the earlier question on Henry the Eighth ("When did Henry the Eighth die?") (Radford 1966, 2). Jean answered correctly by saying that Queen Elizabeth died in 1603 though he was not sure.

If people believe that P, not only they endorse that P, but also, they hold a conviction that P; they are certain and confident that P. In the thought experiment, Jean was able to answer many of the questions Tom asked, such as the year when James the First died, the year that William the Conqueror landed, and the year that Queen Elizabeth died. In fact, it is even intuitive to say that Jean knew some English history, for he was able to answer many of the questions correctly. Indeed, Tom accused Jean of knowing some part of history, and he admitted that he might have picked up some information in a Shakespeare course. However, even though it is clear that Jean knew the answers, it is not clear that Jean believed them. If knowledge entails belief, he should have believed in his words. However, he was not confident in his answers. Therefore, Radford identified it as a case that seems to refute the entailment thesis.

Another thought experiment, which I mentioned earlier, concerns inexplicable knowledge. This is how it plays out. It talks about a man, Jones, who visited horse racetrack in 1950 for the first time. From his first pick to a choice in 1974, Jones correctly identified winning horses every time, every day for 25 years. In 1974, a guy called Brown came and asked Jones, "Which horse will win?" to which Jones replied, "I know that Whirlwind will win the next race" (Mannison 1976, 142). How did Jones know that Whirlwind would win? Jones had always picked the winning horse for the 25 years. By induction, it is probable that he would pick another winning horse. After all, all the horses he picked won the race. Jones knows that the horses he picks wins, and adversaries agree that Jones knows how to pick the winning horse (Almeder and Arrington 1977, 87). Now, let us turn back the clock and visit Jones in 1950. Did Jones know that the horse he picked wins? Yes, for it did win the race. However, did Jones believe that the horse would win the race? It seems unlikely. No justification could have been made. Inexplicable knowledge does not require belief; thus, knowledge does not always entail belief.

One may object that there is a fallacy of equivocation here. The opponents argue that this inexplicable knowledge refers to Jones' ability to pick the winning horse (Almeder and Arrington 1977). Thus, they argue that Mannison invokes procedural knowledge, and procedural knowledge may not entail belief. However, I find this reading dubious. When Brown asked how Jones knew (prior to the race), Brown was asking for the justification of his choice, which is Jones' ability to pick a winning horse. In fact, when we challenge someone else's assertion, we often ask, "How do you know?" (Turri 2016, 8). Back in 1950, Jones did not know that he had the ability; however, it does not mean that he did not display

the knowledge that the horse would win when Jones said that "That horse will win" in 1950 by using his ability dispositionally. Did he believe what he said? No. However, he still said that the horse would win, which was true. His ability is the justification of his knowledge. So, the inexplicable knowledge at play here is not the ability, but rather the result from the ability.

Of course, some may argue that an ability with similar characteristics as that of Jones never happens in real life. It is true that this fictitious ability seems dubious. However, people often display such seemingly inexplicable knowledge. For example, I played *Age of Empires 3* many times although I had not played *StarCraft 2* at the time of the story. Once when my friend played *StarCraft 2*, I said, "Maybe there is a scout there?", and pointed to a map that was hidden from my friend and me. Though my friend did not believe me, he sent a scout there just to discover an enemy scout. Did I believe what I said? I did not know I would be correct or not and raised my tone at the end of the sentence. However, I "kinda" knew that there would be a scout there because of my experience with *Age of Empires 3*. This knowledge seems to be inexplicable knowledge.

One of other criticisms philosophers argue is25 that we ought not to accredit Jones with knowledge 25 years ago as I mentioned in the earlier section. Because of the fact that Jones demonstrated "his awareness of his ability," we attributed the knowledge to Jones (Almeder and Arrington 1977, 89). In other words, because Jones held occurrent belief that we were attributing the epistemic state. If one was aware of a thought, the thought was said to be a mental event or mental process that is "going on" or "happening" in the minds (Goldman 1971, 86). When he answered that Whirlwind would win, he was aware of his

ability; thus, he was holding an occurrent belief. It was because of his occurrent belief that we would say that he knows; thus, Jones in 1950 would not know, for he was unaware of the ability.

One problem with this criticism is that it contradicts some other positions that argue for the epistemic entailment thesis. Before expanding on this point, let us examine evidence from experimental philosophy.

5.6 Evidence from Experimental Philosophy

After the decades of stalemate, Myers-Schulz and Schwitzgebel revived the discussion with experimental philosophy. Though the procedure was simple, it was effective. Before discussing their findings, however, I want to address the bad name associated with experimental philosophy as many philosophers would have raised their eyebrows when they heard the name.

First, they may argue that laypersons who do not know the literature may fail to grasp appropriate concepts associated with each word. They claim that philosophers are excellent "intuitioners" with better intuition on concepts and words than laypersons due to years of training. They "are best suited … to sort out the methodological and conceptual issues that arise in trying to get clear about the complex structure of concepts" (Ludwig 2007, 150–51). In other words, philosophers may worry that the public may not know the highly contextualized words and, thus, may answer with an irrelevant concept when researchers ask a question. For example, the everyday usage of the word "or" is exclusive-or whereas it is inclusive-or in logic. Indeed, when waitpersons ask for chips or soup in restaurants, I do not get both. However, we have to remember the aims of descriptive philosophy. One of the aims

of descriptive philosophy is to give an accurate account of what people mean in everyday language. It is unlike other disciplines; though there are contextualized words, their aim is not to clarify what the words are. If a word is used atypically in philosophy, the usage of the word should be re-examined. (Also, in this case, the usage of the "belief" in this context matches perfectly with the ordinary usage of the word, "belief.")

Related to the first worry, opponents of experimental philosophy may also argue that the ordinary people may have wrong intuitions about the topic. After all, people are likely to assume that ethicists' intuitions are more reliable when it comes to the questions about ethical problems. However, it is not the case; ethicists actions are no better than the ordinary people (Schwitzgebel 2009; Schwitzgebel et al. 2012). If ethicists' intuitions are better than those of non-ethicists', why would it be the case? It is more plausible that their intuitions are not "better."

Why is experimental philosophy useful? It is to note that the use of intuition is not limited to those who are trained in philosophy. Everyone can use intuition on a matter. Knowledge generation is inherently a social process in science. Someone makes a discovery, and others try to replicate and verify the claim. Thus, knowledge is "constructed… by individuals in interaction with one another in ways that modify their observations, theories and hypotheses, and patterns of reasoning" (Longino 1993, 111). In the end, "the production of knowledge is a social enterprise, secured through the critical and cooperative interactions of inquirers" (Anderson 2017).

Why should we not expand this social process model in philosophy by extending the participants to the general public in forms of experiments? Though someone may say that lay

people cannot think, read, or write like philosophers, they can be useful resources. Different intuitions result in different conclusions, which leads to better access to the truth when combined together, especially when it is evident that philosophers' intuitions are not better than those of ordinary people. Though people may not be trained to write like philosophers, nonetheless they do understand ordinary language. When studying the concepts behind the ordinary language and describing it, their feedback will be of great help, especially since "philosophers lack robust sources of feedback regarding the correctness of their intuitions" (Buckwalter 2016, 381).

The first study about the matter in contemporary literature is a study done by Myers-Schulz and Schwitzgebel. They tested people's judgments about cases that are similar to Radford's, such as someone knowing that P (through actions such as studying) but not confidently answering a question at a time of exam although the answer was correct. One case involved an unconfident examinee. A student named Kate studied for an exam in English history class. She studied that Queen Elizabeth died in 1603 and was about to write down 1603 on the test when a bell that indicated that the exam would end within five minutes rang. Out of panic, she could not consciously recollect the answer, so she chose to write 1603, which was the correct answer. When asked, 87% of the people agreed that she knew the answer while only 37% of the people agreed that she believed that the queen died in 1603 (Myers-Schulz and Schwitzgebel 2013, 378). Again, if knowledge entails belief, why did not people attribute the belief to Kate? It seems to suggest that belief does not necessarily follow knowledge.

However, the study received several criticisms. One criticism argues that the belief Myers-Schulz and Schwitzgebel invoked is occurrent beliefs (Rose and Schaffer 2013). At the time when Kate panicked, she could not consciously remember the answer; however, it did not mean that she had forgotten it completely. It may be the case that she remembered it as she wrote although she might not realize it. In fact, as I have mentioned, the result of the unconfident examinee flipped when the question changed.

However, I think that the charge is problematic. Let us revisit the distinction between two approaches that were used to argue for the epistemic entailment thesis: the "old strategy" and the "new strategy." The "old strategy" sees certainty as a characteristic of knowledge, as I explained in the earlier section. However, the "new strategy" by Rose and Schaffer, is different; it does not require the explicitness of belief. The recent generation of philosophers argues that the epistemic entailment thesis concerns only dispositional belief (Rose and Schaffer 2013). This is the dilemma the proponents of the epistemic entailment thesis must solve. Does knowledge require certainty as philosophers such as Lehrer claim? If knowledge does not require certainty, then how will they argue against the thought experiments by Mannison? In Mannison's case, the belief that the horse Jones chose in 1950 does not exist in Jones, for Jones is unaware of his ability. Knowledge that the horse would win is justified because of inexplicable knowledge, but the belief is absent because what makes Jones believe is not present. To argue against it, Almeder and Arrington mandated belief to be occurrent, but they would have a difficult time arguing against Myers-Schulz and Schwitzgebel; people did not attribute belief though they attributed knowledge to the unconfident examinee. Either option is not desirable for the proponents of the epistemic

entailment thesis. However, for the sake of the argument, let us say that the proponents were able to solve the dilemma.

On top of solving the dilemma, the proponents would bring a strong criticism against Myers-Schulz and Schwitzgebel; they employed a between-subjects design, which is inferior to a within-subjects design (Rose and Schaffer 2013, S28). How is a between-subjects design better? After all, would not the order of the questions affect each other? Rose and Schaffer would argue that the order effect can be compensated by further dividing the participants and ask questions in different order, and I concur. Assuming that the proponents solved the dilemma, it would seem that the opponents require a new study that would dissipate the criticisms raised by the proponents.

A study by Murray et al. satisfied what the adversaries of the epistemic entailment required. First, three out of four experiments utilized a within-subject design (Murray, Sytsma, and Livengood 2013, 89). Second, they asked the questions that may not invoke occurrent beliefs. For example, one of the questions they asked was whether God believed that 2+2=4. In the end, 93% of the of the participants answered that God knows that 2+2=4 while only 65% of the participants attributed the belief to God. Someone may object that using God is not a good study design, for the answers from theists may radically be different from the answers from atheists. However, other surveys (with a dog who can calculate, with a cash register, and with a Geocentrist taking a science exam) yielded similar results that are statistically significant (Murray, Sytsma, and Livengood 2013). People attribute knowledge to the other agents while they may not attribute beliefs to the others, and, thus, knowledge does not always entail belief.

At this point, someone may argue that people do not attribute the belief that 2+2=4 to God because one of the senses that belief can be used is to indicate uncertainty. For example, it is not reassuring to hear "I believe I will be there if nothing goes wrong" when confirming a crucial meeting with a friend. Since people do not want to admit that God may be confused about the result of 2+2, it is rational to think that they answered in such way to avoid the uncertainty. If such is the case, then the survey results do not conflict with the epistemic entailment thesis because the thesis does not intend that sense of belief.

However, I believe that there is more natural reading to the question. When researchers asked the questions, I think that invoked the sense of conviction. Let me explain further. Let us ask whether we believe that 2+2=4? What do I mean by it? It is an odd question, for there is nothing to believe. 2+2=4 is a fact about the world that, with no doubt, cannot be false. There is not enough content to emotionally endorse the belief; it is just true by the virtue of being true. This is why I believe that people do not attribute such belief to God, and this shows an interesting case where it may indicate that knowledge does not entail belief when a case is too clear. Now, let us look at evidence from cross-cultural studies.

5.7 Knowledge and Belief in Korean

Before moving on to discuss details of a cross-cultural study, I want to address the elephant in the room. Mainly, citing a cross-cultural study requires one giant leap of faith: universal knowledge-concept. The assumption here is that the knowledge-concept is universal; the concept of knowledge is shared between culture. However, is it the case?

On one hand, it seems plausible that cultural backgrounds of individuals shape knowledge-concept. After all, what is considered to be rude in a culture may be okay in the

other. If such is the case, then, by analogy, should not knowledge-concepts be different from people? Also, there is a study stating that participants in experiments responded differently depending on their background culture and socioeconomic status (Kim and Yuan 2015, 355; Seyedsayamdost 2015, 95–96; Weinberg, Nichols, and Stich 2001).

However, the problem with the study is that the other researchers failed to replicate it (Kim and Yuan 2015; Seyedsayamdost 2015). Also, I do not think that it is plausible because of primatology. As we have discussed in previous sections, even primates act similarly when it comes to knowledge-ignorance tests. If different species seem to share a common knowledge-concept, then what is the reason to believe that individuals in the same species do not share the universal concept?

Also, though it is not conclusive, the empirical evidence suggests that the knowledge-concept is universal. First, there is a study done by Turri and Park, which provides evidence that knowledge is the norm of assertion in Korean speakers (Turri and Park forthcoming); Koreans assert what they know just like Anglophones.

Here are the results of experiments done by the paper. When the participants in the experiments were asked when they ought to assert, the participants responded with the factive account of assertion in the first experiment; people are to assert when it is true (Turri and Park forthcoming, 11). In the second experiment, the researchers tested the effects of assertability with different mental representation, and knowledge judgements "significant predicted assertability rating" (Turri and Park forthcoming, 15). When the researchers back-translated stimuli into English and tested on Anglophones, the results were replicated (Turri and Park forthcoming, 20). Not only the practice of assertion and knowledge-concept is

similar, but also intuitions on Gettier cases are similar (Kim and Yuan 2015). Considering these empirical studies, it seems likely that knowledge-concept is, at least, universal across two language families if not more. With this said, let us turn to the study itself.

The study asked Koreans speakers in Korean with stimuli translated into Korean. The stimulus was an excerpt from the study by Murray et al. Murray et al. featured five cases: on God, on a dog that can count, on cash register, and on geocentrist. Turri and Park used the case of the geocentrist taking a science exam.

The survey was done on an online platform called DooIt based in Seoul, the Republic of Korea. The participants were compensated by DooIt survey with points, which can be converted into cash. Each participant was assigned to either of the following conditions: true condition with belief first, true condition with knowledge first, false condition with belief first, and false condition with knowledge first.

The translated stimulus is the following:

> YoungHee is taking an introductory science class at university. According to her professor and textbook for the class, the earth revolves around the sun. However, her family is very religious, and her parents taught her that the earth is the center of the universe. Accordingly, YoungHee frequently tells other students at university that the earth does not revolve around the sun.¶[3] On the final exam for her introductory science class, YoungHee was asked this following question:
>
> The earth revolves around the sun. (True/False)
>
> YoungHee answers [“false”/“true”]. She [does not/does] get credit for the question and scores [98%/100%] on the exam. (Turri and Park in review, 6)

[3] Indicates a paragraph break on the participant’s screen.

After the participants read the translated stimulus, researchers asked them the following questions ordered randomly, thus designing within-subjects study though they compared between-subjects factors too.

> YoungHee believes that the earth revolves around the sun. (believes)
>
> YoungHee knows that the earth revolves around the sun. (knows)
> (Turri and Park in review, 6)

The results replicated the study by Murray et al. Out of 251 participants, 150 passed the comprehension question and attention check though inclusion of people who failed yielded a similar pattern. The mean knowledge attribution was always higher than belief attribution for both of the true and false condition (Turri and Park in review, 10). The relationship between knowledge and belief, it seems, is robust across culture.

However, I want to step a bit further. Until now, I have focused on the fact that people do not attribute belief though they may attribute knowledge. Another approach to evaluating the epistemic entailment thesis is to study the relationship between attributions of knowledge and attributions of belief. If belief is a necessary condition for knowledge, then belief should be one of the significant predictors of knowledge attribution when both are present.

However, it seems that it is not the case. Knowledge attributions did not happen based on the belief attributions. Let us examine the same cross-cultural study. In the same paper, the researchers conducted a causal search with GES algorithm, which makes "causal inferences from correlations and independence relations in a dataset" (Turri and Park in review, 12). The causal-search results are hard to reconcile with the epistemic entailment thesis. In the best fitting causal model for the data, belief attribution did not cause

knowledge attribution. Rather, it was truth-value that caused knowledge, which, in turn, caused belief attribution. If belief is a necessary condition for knowledge, why would this be a case?

In the end, I think that the epistemic entailment thesis is dubious. The theoretical biology seems to reject it. The developmental psychology and primatology seem to reject it. Philosophers came up with thought experiments that seem to reject it, and the intuitions were validated by the experimental philosophers. Lastly, even the cross-cultural study supports the opposite conclusion.

6 Attempts to Salvage the Epistemic Entailment Thesis

Now, after the revival of the discussion and presentation of the evidence against the epistemic entailment thesis, many have attempted to alter the definition of "belief" and salvage what is left, or at least a part of it. Many of the attempts stem from an approach taken by Armstrong. Therefore, I will go over the argument of Armstrong before analyzing other approaches.

Armstrong listed four possible cases of the relationship between knowledge and belief: strong acceptance of belief-condition, weak acceptance of belief-condition, weak denial of belief-condition, and strong denial of belief condition (Armstrong 1969, 21–22). Strong acceptance of belief condition is the typical epistemic entailment thesis; if one knows that P, then she not only believes but is confident that P. This is what the epistemic entailment thesis argues. Second is the case when if one knows that P, one believes that P. I want to define it as the "weak epistemic entailment thesis." There are many ways to indicate

how it is weak, and I will go over what philosophers did to weaken the epistemic entailment thesis. The weak denial of a belief-condition is a claim that knowledge does not always entail belief. Lastly, the strong denial of belief condition is the exclusion of belief in knowledge, which I will discuss in section 8.

After defining four possible relationships between knowledge and belief, Armstrong concludes that the weak acceptance of belief-condition is the way to go through the process of elimination. Belief, in this case, does not describe the belief of the epistemic entailment thesis. Notice the difference between strong acceptance of belief condition and the weak acceptance of belief-condition. In the paragraph, I juxtaposed the two positions: belief with certainty and belief. The sense of belief with certainty is the following; strong acceptance of belief condition "is the view that if somebody knows something to be true, it is not simply entailed that he believes that thing to be true, but it is entailed that he is certain or sure that that thing is true" (Armstrong 1969, 21). Though he did not discuss the sense of weak beliefs further, weak belief in his context is the belief without certainty; a mental representation with a bare pro-attitude.

Following the footsteps of Armstrong, philosophers recently made attempts to redefine belief in a strong sense and a weak sense. Some argued that belief should further be classified into "belief-necessary-for-knowledge" and "belief-as-such" (Baumann 2017). The following is the definition of the terms.

> (Belief as such) S has a belief-as-such that p just in case S's degree of conviction that p is above the threshold TB… (Belief for knowledge) S has a belief-for-knowledge that p just in case S's degree of conviction is above the threshold TK…. (Baumann 2017, 3)

Interestingly, the distinction between the two is based on the degree of conviction of the individual. What is the relationship between T_B and T_K, the threshold for different degree of conviction? It seems that there is none; all three cases where $T_B < T_K$, $T_K > T_B$, and $T_B = T_K$ are acceptable (Baumann 2017, 4). It seems that beliefs in each case should be treated differently in each case.

Though I think it is an interesting approach, I think that the proposal is not the way to go. First of all, if we are to lose part of the meaning of "belief," then why are we still calling them "belief"? Belief indicates emotions such as certainty, conviction, endorsement, and motivation. We are convinced of our beliefs, and, thus, we have convictions that it is true. If we lose the conviction, then the thought is not belief anymore, at least in the traditional sense. If it is not a belief anymore, then it just shows the need to abandon the epistemic entailment thesis. Second, Armstrong's conjecture indicates the strength of different beliefs, with which I concur; outright belief is much stronger than just belief. However, this sense of power difference is lost with Baumann's suggestion. Third, I do not quite understand the difference between belief-as-such and belief-for-knowledge. He argues that there are cases where belief-as-such is stronger than belief-for-knowledge. He also argues that there are cases where belief-for-knowledge requires higher conviction level than belief-as-such. They share one spectrum, and the difference between them is the degree of conviction. The only difference, it seems, is the usage: belief-for-knowledge appears when we are concerned with knowledge. Belief-as-such appears when we are not concerned with knowledge. It seems like a very *ad hoc* approach.

The last approach is from experimental philosophers and, unlike the one Baumann took, it is very strongly backed with experimental data. Before discussing the experiments, however, I want to specify the terms they used. The researchers of the study used "thin belief" to be a bare representation that P is true, a minimal cognitive pro-attitude (Buckwalter, Rose, and Turri 2015). This contrasts with the other term, "thick belief," which is more than just a bare cognitive pro-attitude. It "also involves *emotion* or *conation*… [One] might also *like it* that P is true, *emotionally endorse* the truth of P, *explicitly avow or assent to* the truth of P, or *actively promote an agenda* that makes sense given P" (Buckwalter, Rose, and Turri 2015, 749 with emphasis from the original).

Now, let us redefine the epistemic entailment thesis. The traditional epistemic entailment thesis referred to the outright belief. I will call it "thick epistemic entailment thesis." At this point, I am hopeful that I have made a compelling case to reject it. Now, I will respond to "thin entailment thesis," which states that knowledge entails thin belief (Buckwalter, Rose, and Turri 2015, 756).

First of all, I have to give credit to the proponents of the thin epistemic entailment thesis, for the different senses of belief are empirically grounded; many experimental studies suggest the two senses of the term, "belief." In philosophy, there are debates whether, as a conceptual matter, delusions count as beliefs. To solve the issue, experimental philosophers studied belief attributions to delusional agents. For example, one case involved a patient with Capgras syndrome, who, due to brain damage, said, "You are not my real wife. You are an imposter," to his wife. The group who read it were divided into two groups. In one case, the man said the phrase frequently. In the other group, the man said the phrase only once, and

life went on normally. Then, the participants were asked whether 1) the man believes that his wife is an imposter or 2) the man thinks that his wife is an imposter. The responses were collected on a 7-point scale with 0 being the midpoint, negative ratings being disagreeing with the statements, and positive ratings being agreeing with the statements. The results were statistically significant. When the patient in the story frequently asserted the statement, people judged that he both thinks and believes that his wife is an imposter. However, when the patient did not frequently assert the statement, people denied that he had thick belief but attributed to him a thin belief that his wife is an imposter (Rose, Buckwalter, and Turri 2014, 690–91). The two senses of belief seem to be real and common. Though it does not prove the thin epistemic entailment thesis, it nevertheless motivates a distinction between two common senses of "belief" and raises the possibility that the thin entailment thesis may be true as opposed to the thick entailment thesis.

A different series of studies applied the distinction directly to the debate over the epistemic entailment thesis. Researchers probed participants with similar questions from Murray et al.'s but with a twist; they "thickened" the plot and "thinned" the probe to test whether they can control different factors concerning thick and thin belief (Buckwalter, Rose, and Turri 2015, 758). When a plot is thickened, it manipulates the text so that protagonists of the story are clear that they outright believe that P. When a probe is thinned, the question changed the word "believe" to "think" and added a phrase, "at least on some level," to allow for a dispositional sense of belief. When the researchers asked the case of a Geocentrist, the results were as expected. When the plot was thickened, more people attributed the geocentric belief to the Geocentrist who got the question on heliocentrism right. When the probe was

thinned, belief attribution on the Geocentrist even surpassed the knowledge attribution. Perhaps, does knowledge entail thin belief?

However, I offer a word of caution against such a hasty conclusion, for there are some experimental data that the proponents of the thin epistemic entailment thesis must answer to. First, belief attribution does not predict knowledge attribution. In one set of studies, researchers asked participants various questions, such as whether a protagonist in the story knew, thought, or believed. According to the results, thin belief attributions did not predict knowledge attributions (Turri and Buckwalter forthcoming; see also Turri, Buckwalter, and Rose 2016, 216).

Second, the assumption in the thin epistemic entailment thesis is that thought is a simpler concept. This means that thin belief attribution would be a less taxing operation in human brains than knowledge attribution. If such is the case, then one would expect thin belief attribution to be faster than knowledge attribution. However, existing evidence suggests that this is not the case. A study shows that the participants took more time when they are asked to attribute thoughts than knowledge (Phillips, Knobe, and Cushman 2015). Based on the reaction time study, I do not think I can accept that even thin belief is a constituent of knowledge. In the end, I find that the efforts to reduce conviction coming with belief fails because thin belief is not a good predictor of knowledge and belief attribution is slower than knowledge attribution.

7 Does Knowledge Exclude Belief?

Then does knowledge exclude belief? In fact, Wilson stated, “Belief is not knowledge[,] and the man who knows does not believe at all what he knows; he knows it” (1969, 100). However, I believe that the position is untenable. Armstrong, when discussing the epistemic entailment thesis, explained why knowledge does not exclude belief in the following way:

1. Sometimes one is certain of the same thing that one knows.
2. To be certain of something entails believing it.
3. Therefore, sometimes one believes the same thing that one knows.

In many cases, if we know that P, we are convinced and certain of P. Since we are certain, we have a conviction that it is P, thus we believe what we know. For example, if I know that there is a cup on my desk, and I can touch it and feel it, then I am quite certain that there is a cup on my desk. I will even say that I believe the fact that there is a cup on my desk. This example shows that one believes what one knows. For this reason, I reject the hypothesis that knowledge excludes belief.

8 Conclusion

Through the thesis, I have looked at various versions of epistemic entailment thesis and evaluated whether they accurately describe the conceptual relationship between knowledge and belief. After the introduction, I clarified the implications of the epistemic entailment thesis. After the clarification, I explained the methodology that I would use. In section four, I dived into the argument for the epistemic entailment thesis, and I argued that

the epistemic entailment thesis is not sound when one goes over the evidence. In section 6, I tried to argue against the attempts to lessen the level of conviction in belief to have a weakened version of epistemic entailment thesis. I challenged the proponents of thin epistemic entailment thesis with some other studies such as reaction time experiment. Lastly, I stated that though the epistemic entailment thesis may be false, it does not mean that knowledge excludes belief. In the end, I have tried to reject every type of epistemic entailment thesis.

However, though this project may have been finished, I believe I can branch out from it. First is the descriptive branch. Going back to the beginning, I discussed how the argument against the perceptual entailment thesis depends on the epistemic entailment thesis. Since the epistemic entailment thesis does not stand, how would it change the argument against the perceptual entailment thesis? Also, in the debate between intellectualists and anti-intellectualists, the epistemic entailment thesis was the key. After all, it is dubious whether procedural knowledge can yield a belief of some sort. However, since the evidence against the epistemic entailment thesis appears to be conclusive, I am hopeful for the intellectualists. After all, representing how to do something does not require emotional endorsement.

Though these are all interesting questions and deserve further attention, the second branch is where it gets interesting. I call this the normative branch. The thick entailment thesis has been refuted; it is not an accurate description. However, can it be a right prescription? Should it be a normative account? After all, there are many hypocrites. They say one thing but believe and act differently. One of the examples are the stories of the Pharisees in the Christian context; though they act holy, they are earthly inside, and Jesus

accuses them of being hypocrites. Confucius also warned his disciples to act first before speaking about it so that the actions and the words are identical. Based on those stories, it seems that hypocrites are universally seen as unethical. Indeed, when challenging someone of something, one of the possible ways of doing it is to accuse them of not believing what they are saying. Perhaps the thick entailment thesis may provide a good normative account of the relationship between knowledge and belief, how knowledge is dead without application, and how one is to act what one knows.

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